

Jupiter's Polar Hoods and Prominent Temperate Latitude Features: An Assessment of Temporal Variability Between the 1992 and 1993 Apparitions

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Near-infrared imagery acquired at wavelengths within deep H_2 and CH_4 absorption bands reveal prominent polar hoods and, at temperate latitudes in both the northern and southern hemisphere, anomalously bright, localized features, ("spots"; each is 3-5 times brighter than their surroundings). We have observed such features at sub-arcsec resolution during the past two apparitions (23 Feb 1992 and 25 April 1993) with the ProtoCAM near-ir camera at the NASA/IRTF. We find that both polar hoods grew both significantly brighter and more extensive in area during this period. The northern hood is approximately 60% brighter in 1993 compared to 1992 at $2.14 \mu m$, indicating perhaps a significant increase in the vertical column abundance of stratospheric aerosols. A distinctive asymmetrical shape is apparent in data acquired in both years, with increased asymmetry in 1993. Specifically, the hood boundary extends southward to 51° lat at 319° lon (System III), but only to 63° lat at 184° lon. When viewed from intermediate longitudes, the north polar hood appears "cocked", much as reported from $0.89\text{-}\mu m$ observations by W. Pryor (personnel communication). In contrast, the southern hood does not appear "cocked" in either year. One bright, localized spot was observed at northern temperate latitudes each year. In 1992, the northern spot was located 35.6° N lat and spanned $4^\circ \times 2^\circ$ in latitude and longitude. The 1993 spot was at 34.7° N lat, but was significantly larger ($8^\circ \times 6^\circ$). In 1992, two southern spots were observed, co-located at 27.5° S. lat. Each was significantly larger than their northern counterpart ($\sim 9^\circ \times 4^\circ$). In 1993, a southern spot was located at 29.1° S and extended $5.3^\circ \times 7.0^\circ$. Finally, a brightening in the region of the SEB revival was centered at 10.7° S lat, 322.4° lon on 25 April 1993, spanning $5.0^\circ \times 6.3^\circ$.